

When The Rubber Hits The Road: Lessons From The Goodyear Tire and Rubber Company's Global Ergonomics Process

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Introduction

During the past two years, The Goodyear Tire & Rubber Company invested time and effort to change and improve the safety culture of the workplace and global organization. A major component of the focus has been improving the ergonomic conditions of the workplace and work practices by associates. The purpose of this presentation is to share Goodyear's approach, successful practices, and challenges deploying a common, sustainable and effective ergonomics improvement process in a global organization.

In late 2004 Goodyear's executive Environmental, Health and Safety (EHS) Leadership Council asked if more could be done to improve safety performance. Although Goodyear was the safety leader in the global rubber manufacturing industry, it was believed that too many associates were getting hurt. The Council challenged the global health and safety team to develop a strategy that would lead Goodyear to industry safety excellence. Beginning with a thorough analysis of our global safety performance, key areas of concern were identified and, subsequently, a strategic roadmap developed. Our four key roadmap elements include: Leadership, Behavior, Ergonomics, and PM/Compliance.

Globally, 27% of Goodyear's injuries were a result of pushing, pulling, lifting, twisting, and bending – ergonomic related incidents. In the U.S., data indicated that half fell into this category. The global health and safety team had included ergonomics in their safety management system but now wanted a step-change. The goal was to turn their 'ergonomic program' into a full 'ergonomic process'. Since Goodyear did not have the internal skill set to lead this process, it would require a strong partner. Humantech was identified as a leader in the field with a global footprint that could provide the necessary knowledge, tools, and resources.

Goodyear Organization and Need for Improvement

Goodyear, one of the world's leading tire companies, has a presence on six continents and annual sales of \$20 billion. In addition to Goodyear brand tires, it produces and sells tires under several other well-respected brand names including Dunlop, Kelly, Fulda, Sava and Debica. Its non-tire business units provide rubber products and polymers for a variety of automotive and industrial markets. Goodyear markets its products in 185 countries, manufactures them in more than 100 plants in 29 countries, and employs more than 80,000 associates.

For the better part of a century, Goodyear's corporate values have been centered on the phrase, "Protect Our Good Name." Being a global company with a diverse workforce, Goodyear's ergonomic initiative had to be consistent, effective, and culturally adaptable. It would also have to demonstrate both a reduction in incidents as well as a return on investment.

The Ergonomics Improvement Process

The approach used by Goodyear was based on elements of programs at successful organizations. These elements include:

- Drive ergonomics as an engineering discipline with the Safety Department.
 - Manage the improvement as a process, not a program. To ensure success, the improvement process had to be sustainable over time, and as personnel changes occurred.
 - Focus on reducing risk factors of Work-related Musculoskeletal Disorders (WMSDs). By focusing on the exposure (risk factors) instead of consequences (WMSDs), plants would proactively identify, anticipate, and prevent losses.
 - Driven by data. Using the measured level of exposure to risk factors, plants would know the location, size and cause of ergonomic exposures.
 - Pursue engineering controls in the work environment. Following the hierarchy of control, eliminate or reduce ergonomic risk factors through equipment, process, and tool changes. This better ensures risks are eliminated, is not dependent upon individual work practices and behaviors, while reducing the need for behavioral observation and feedback, and administrative controls.
 - Work toward a common goal and track progress with metrics so all engineers, managers and associates know their progress.
 - Provide clearly defined rolls and responsibilities for individuals throughout the organization. As a result, each person knows how he or she is expected to contribute to the success of the program, and who to turn to for assistance. In addition, roles and responsibilities provide a structure for holding people accountable for results at all levels of the organization.
 - Address both tactical and strategic elements. Tactical elements are the actions of identifying and reducing ergonomic risk factors in the workplace. Strategic refers to the activities and steps senior management and leaders must put in place (management system) to support and ensure ongoing success of the tactical elements.
 - Leverage existing resources and processes within the organization.
 - Manage the identification and reduction of ergonomic risks as a continuous improvement (CI) process.
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- Engage, involve and leverage from associates. Develop expertise within the organization so the knowledge and technical abilities supporting ergonomics exist within, and are sustained by, Goodyear.
- Communicate progress and results.
- Demonstrate value to the company and to individuals.

An ergonomics improvement process was mapped out following a review of the existing safety management system, CI process, and corporate systems. It was mapped to the five steps of the Six Sigma improvement process. Six Sigma is a common tool used and understood throughout the company. Aligning with a familiar process increases the uptake and understanding of the new ergonomics improvement process. In addition, it was presented in a format and language familiar to managers, engineers and associates. The steps of the Six Sigma process are Define, Measure, Analyze, Improve, and Control (DMAIC). All steps and elements were documented to ensure continuity.

The core document is the Ergonomics Process Standard, a corporate technical instruction that clearly states what must be in place (requirements), who is responsible (roles and responsibilities), and how progress will be measured (metrics). Goodyear expects the following elements to be in place at each plant:

Define: Establish a common goal for improvement and metrics to track process. Establish needed resources including a support infrastructure.

Measure: Identify and assess tasks for ergonomic risk. Determine the level of exposure to risk.

Analyze: Evaluate and identify hazards, determine the level of exposure to risk. Evaluate new tools and processes for risk.

Improve: Control risks and hazards in the workplace. Validate reduction of risk.

Control: Monitor, review and maintain controls.

In addition, there are specific requirements for maintaining key records of the improvement process.

The requirement in the Standard provided the criteria for auditing the ergonomics process.

Deployment of Process at Sites

Based on the diversity and location of Goodyear operations, it was determined to focus deployment on a number of select locations each year. Deployment followed a four-phase project plan.

- **Establish common tools and approach.** In addition to the Ergonomics Process Standard (above), common assessment and tracking tools were selected to ensure consistent measurement and tracking. In this phase, workshops were conducted to engage both plant leadership and ergonomics process leads. Together they developed implementation plans for their respective sites.
 - **Engage associates and make quick improvements.** Improvement events based on KAIZEN were conducted to make quick, simple changes in the workplace. This engaged
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- associates, changed the workplace, and started the momentum for the ergonomics process.
- **Establish a sustainable improvement process.** Through training, the skills and abilities of key associates were developed so they could conduct ergonomic risk assessments and design/implement solutions in the workplace. This phase established a sustainable improvement process owned and driven by the plant.
 - **Follow-up and audit the process.** Finally, each ergonomic process was audited against the criteria to ensure the plant met company expectations.

Implementing a new process and approach across a global company is a large challenge. To improve the chance of success, the process, tools and approach were first piloted at five plants. These plants represented all business units. Plants were selected for different reasons including; high incidence of WMSDs (need to do it), interest of plant management (want to do it), type of operations/products (opportunities for improvement), and agreement with labor union (commitment to do it).

Integration and Adaptation of Business Worldwide

Step one in the deployment of Goodyear's ergonomics initiative was to ensure that the process would integrate into the company's existing CI and manufacturing systems, as well as be adaptable to various cultures and operations.

Based on the pilot implementations, Goodyear designed an Ergonomics Center of Excellence [ECO] model. ECO, following closely the DMAIC and CI process flow, allowed for a systematic roll out that included:

- Site pre-visit by a Humantech consultant. The purpose was to align expectations with the project charter and arrange materials for RAPID events
- Conduct RAPID [Risk and Performance Improvement Deployment] events. RAPID events are a form of KAIZEN tactical activities that make swift, measurable, and relevant improvements to the workplace, eliminating non-value-added work elements.
- Follow-up audits to ensure that the process aligns with Goodyear's internal process document
- Training all team members involved in the process, which included both plant manufacturing and functional leadership as well as floor employees.

In some regions, the ECO process was modified to fit the accelerated Goodyear's CI culture. To meet the needs of the region Rapid Improvement Activity [RIA] kaizen events were developed. These activities, patterned after the ECO RAPID events, were expanded to include other safety items including behavior and 5S.

In order to address the non-manufacturing operations, such as retail stores, a team of Humantech engineers and Goodyear internal safety experts piloted a modified model of the ECO process that is still under development.

Results Achieved

Since the kickoff of Goodyear's ergonomic strategic plan, 10 sites in the U.S. and 4 in Europe have implemented the process. Another 9 sites in Europe will launch the process in 2007. More than 58 sites in the U.S., Canada, and Latin America have implemented the RIA process. In order to build a solid foundation and to ensure sustainability, more than 2,000 hourly and salaried associates have been trained in the Goodyear ergonomic process. Training in 2007 will be expanded and accelerated.

However, the most important achievements come in the way of risk reduction. Since January 2005 more than 3,600 identified risks have been eliminated from the work place through the ECOE process and RIA events. The elimination of risk from the workplace has played a significant role in the 33% reduction in our global total OSHA incident rate, with regional improvements ranging from 17% to 56%. Data collected from our RAPID and RIA events has also allowed for engineering design improvements. Through the RPM [Risk Priority Management] system floor team, leadership, engineering, and medical, as well as global health and safety staff members, are better equipped to address risk and improve efficiency.

Lessons Learned

- Ergonomics must be a process and integrated into existing CI systems
 - Planning is required before implementation and must link and align to a global strategic plan
 - An effective global ergonomic process is complex
 - Define roles of senior managers, plant leaders, floor employees, health and safety, etc. before beginning the process
 - Find ways to break through barriers (e.g. business slowdown, work stoppage, natural disasters)
 - Partner with both management and labor at the plant level
 - Solicit both capital and expense budgets prior to deployment
 - Understand and educate everyone on the difference between KAIZEN events and sustainability
 - Implement a plan for cultural and language differences
 - If you don't have the skill sets you need, find a value-adding partner.
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